



“Wood energy production and processing to charcoal in Madagascar and Senegal ”

Elements, challenges and impacts



Steve Sepp - ECO-Consult
International Cooking Energy Forum - Bonn



Background and national settings

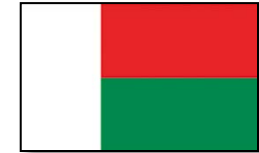


Urban population: 6.1 mill.

GDP per capita : \$ 1,900 (rank 193/229)

Charcoal consumption: 96 kg/pers./a

Price per kg: 0,43 US ct.



Urban population: 7.3 mill.

GDP - per capita : \$ 1,000 (rank 218/229)

Charcoal consumption: 110 kg/pers./a

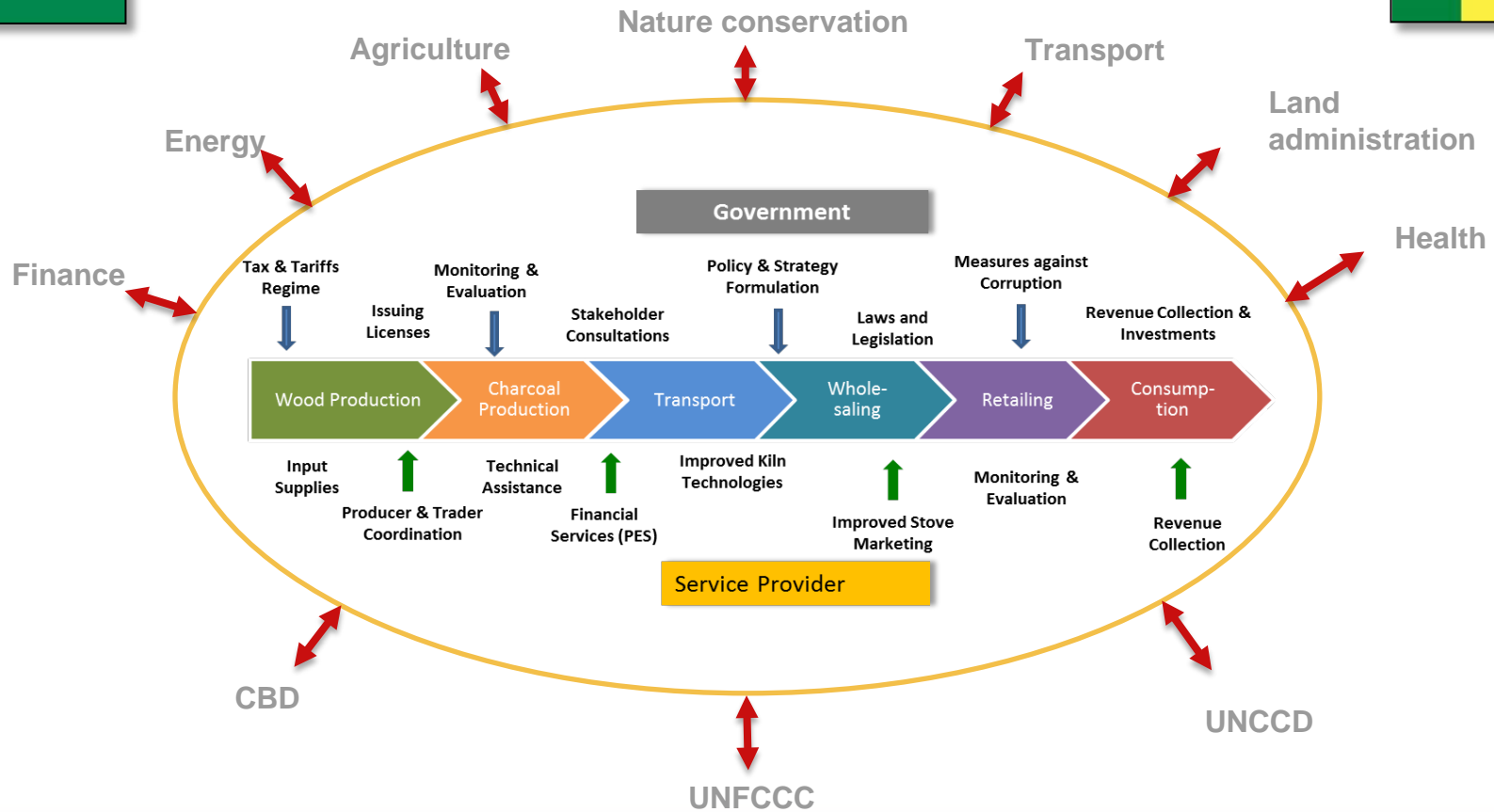
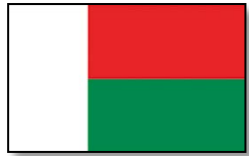
Price per kg: 0,12 US ct.

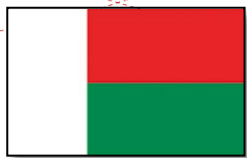
Revenues generated annually by the charcoal sector





Common feature: holistic value chain approach



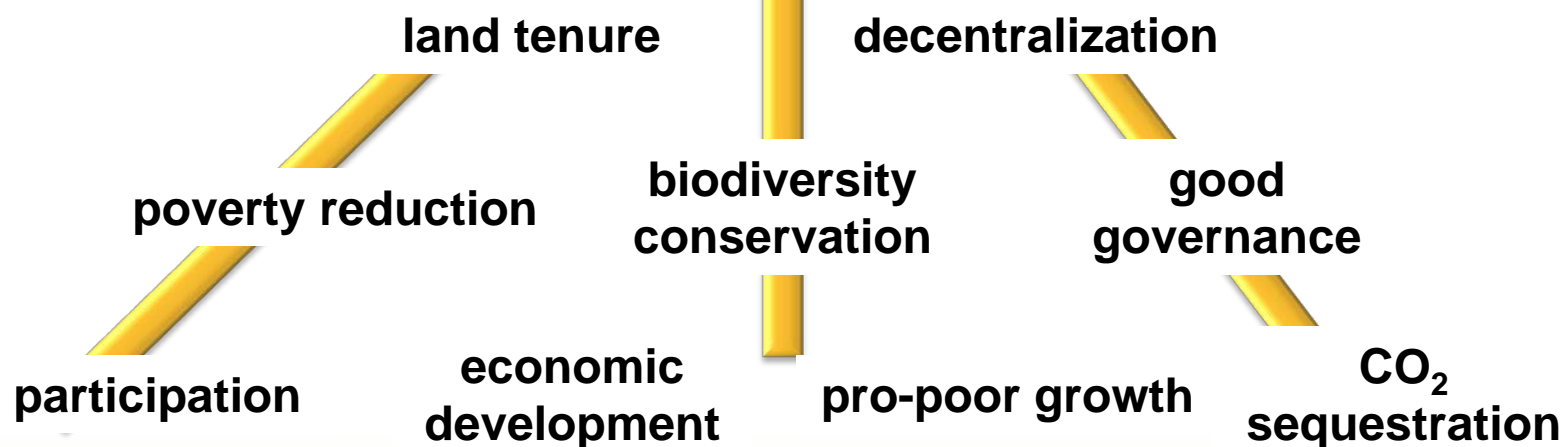


Common feature: Sustainability via Modernization Strategy

To incentivize the promotion, production, commercialization, and utilization of wood energy for a wide range of stakeholders

Biggest challenge:
Non-regulated depletion of forests

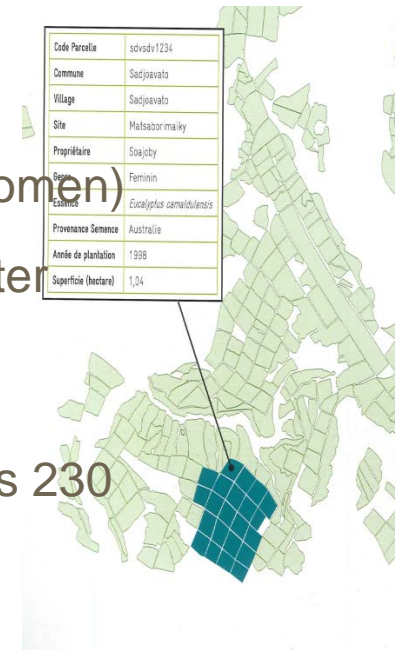
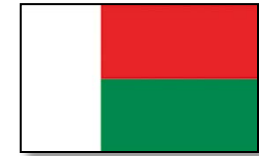
**Sustainable
wood
production**





Core elements of the reforestation approach

- Local afforestation groups and municipalities **cooperate** for the **identification** and **demarcation** of appropriate “waste” land
- Integration into **communal** and **regional land use planning** processes
- Interested participants need **formalization** as a group at local / village level (local afforestation group)
- **Allocation** of afforestation plots **to individuals** (incl. landless, women)
- **Mechanic soil preparation** prior to planting (erosion control, water infiltration, weed limitation)
- Afforestation with **fast growing trees** on degraded land without agricultural potential (rotation period 5-7 years, afforestation costs 230 €/ha)
- **Individual land titles** are attributed to participants as a result of valorization of land
- GIS based **Impact Monitoring System**





Stationary charcoal processing (retorts)

- ✓ Retort efficiency: 35% (nearly triple of traditional kiln)
- ✓ Reduced air pollution by up to approximately 75%
- ✓ Operating time much shorter (5 days instead of 23 days)
- ✓ Better quality
- ❖ High investment costs (1,500 €/unit)
- ❖ Only profitable through rural market approach





Establishment of “green wood energy markets”



- Shareholder approach (plantation owner)
- Several rural depots supply one urban charcoal depot
- Packaging to display origin
- Revenue increase for producers through by-passing merchants/transporters
- Revenue increase through grading
- Increase of income of 20%





Impacts

- 7,050 ha degraded grassland savanna afforested by 2,900 rural households
- Avoided deforestation and forest degradation of 49,000 ha of natural forests
- 800 ha exploitable plantation/year, which satisfies the domestic energy needs of 40.000 (urban) persons
- 20% increase of average rural HH income (→ poverty reduction)
- Four rural and urban „green wood energy markets“ set in place and run by local entrepreneurs
- Increase of income of rural market shareholders





Senegal: Core elements of the NFM approach

- **Existence of legal provisions** for rural communities (RC) to establish their own community forests on their territory and/or to co-manage state forests (FC)
- A **permanent long-term forester** paid by the regional council takes responsibility for supporting forest activities in the RC
- **Simple forest management plans** are established
- **Relationship, roles and mandates** of different parties are **clarified** in form of agreements/contracts specifying rights, obligations and tasks (Regional Council → RC → “Inter-Village Organization” → Forest User Groups-FUGs)
- **Negotiated “allocation key” of income** from forest management: 20% of the FUG’s income are channeled to: (i) budget of the RC; (ii) forest management fund used by the Inter Village Organization; (iii) social fund on village level; and (iv) Regional Forest Fund



Mobile charcoal processing (Casamance kiln)



- Earth mound kiln equipped with a chimney
- Kiln efficiency: 25% (double of traditional kiln)
- Carbonisation time: 17 days (instead of 25 days)
- Charcoal producers are obliged to apply improved kilns





Marketing „Green Charcoal“

- Marketing is the responsibility of “Economic Interest Groups” - mainly women
- Women buy the charcoal from the Forest User Groups
- They assume quality control and are responsible for packaging and labeling
- Marketing is done through rural charcoal depots





Impacts

- Regional Wood Energy Strategy (Vision 2025) became a multi-donor approach
- The regional administration is piloting forest activities (→ decentralisation)
- Local communities sustainably manage about 50,000 hectares
- 1,370 formalised and legally established jobs created
- 249 women commercialize charcoal in a formalized manner
- In a 30 years perspective the value throughout the entire value chain is estimated at 56 million € (→ poverty alleviation)





Challenges

- Improved forest governance to forestall uncontrolled exploitation
- Better integration into national forest and energy policies
- More commitment through Development Cooperation

